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ECONOMIC IMPACT OF ROCKSLIDES IN TENNESSEE AND NORTH CAROLINA

Prepared for

Appalachian Regional Commission

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Risk Analysis • Investment and Finance
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ECONOMIC IMPACT OF ROCKSLIDES IN TENNESSEE AND NORTH CAROLINA

1. Introduction

Two major rockslides occurred in the southwestern portion of North Carolina (NC) and southeastern portion of Tennessee (TN) during the fall of 2009. The first rockslide occurred on October 25th in Haywood County, NC, resulting in the closure of a section of Interstate 40 (I-40) at mile marker 2.6, about 50 miles west of Asheville, North Carolina, near the Tennessee border.¹ The second rockslide occurred on November 10th in Polk County, TN. This rockslide closed a section of U.S. Route 64 (US-64). Figure 1 shows the location of these rockslides and the associated detours.

Figure 1: I-40 and US-64 Rockslides and Detours



The objective of this study for the Appalachian Regional Commission (ARC) is to estimate the economic impacts of these rockslides and the resulting road closures. To expedite the study, the analysis focused on two categories of economic and transportation impacts:

¹ Rockslide Closes I-40 Near Tennessee, by Ely Portillo, Charlotte Observer, Posted: Monday, Oct. 26, 2009, <http://www.charlotteobserver.com/2009/10/26/1019615/rockslide-closes-i-40-near-tennessee.html>

- **Local and Regional Economic Impacts** – the loss in business sales, visitors, tourism spending, and jobs for areas directly impacted by road closures and loss of transportation access and traffic volumes.
- **Transportation Costs** – extended road closures of key highways in Appalachia can result in significant detours leading to longer trips (more miles traveled), less direct trips, and additional congestion on the detour routes. Transportation costs impact both auto travel (personal, commuting, tourism) as well as longer distance freight shipments.

1.1 Local and Regional Impacts

Rockslides in mountainous areas can have a significant impact on our transportation system, national trade flows, local and regional economies, and the commuters who rely on these routes. Because of the terrain in rockslide prone areas, the alternate routes to travel between communities can be limited.

The closure of one route due to a rockslide can severely limit the ability of residents to get to work and school, receive the medical care they require, and purchase the items they need. These road closures often impose additional costs on businesses by forcing them to take longer routes to deliver their products to markets and ports, or serve their clients. People may also have difficulty reaching a business, which means fewer customers and clients. As a result, business revenue may decrease. In some cases, the financial burden associated with these additional costs and overall reduction in business requires the elimination of jobs.

The impact of a disruption to the transportation system can be devastating to a local or regional economy, particularly if the disruption continues for a long period of time. This report investigates the impact to the economies of the communities in the rockslide impacted areas. A complete discussion of our approach and our findings are provided in subsequent sections.

1.2 Transportation Costs

In addition to the impact on the “bottom line” of businesses in the area, there are direct costs that are imposed on the region in terms of transportation costs. The longer alternate routes mean longer commute times for workers, as well as heavier traffic for the region in which the detours are located.

Even if an alternate route is shorter in distance, the speed limit may be lower which means total travel time is higher. In addition, the increased traffic on the alternate routes impacts incumbent drivers. Their travel time is now increased. Because people’s time has value, it is important to incorporate this value of time into any discussion of the rockslides’ impact to the region.

The rockslides and corresponding detours also contribute to increased congestion on those alternate routes. Because vehicles are being required to run for longer periods of time when traffic is increased, the wear and tear on the vehicles, not to mention the increased fuel and oil consumption, imposes an additional cost on drivers.

The additional traffic also means higher maintenance costs for those alternate roadways, as well as an increase in the level of pollutants being emitted by automobiles and trucks. These costs impact more than just the vehicle drivers; they affect the entire region.

A complete discussion of the transportation costs estimated in the analysis is provided in the report. The estimates of costs by rockslide-impacted area, as well as the total costs to the region, are also provided.

1.3 Summary of Findings

The negative economic effect of the rockslides is measurable for the communities in closest proximity to the rockslide site. Business revenue has decreased, employees have been laid off, and businesses are experiencing transportation cost increases. Whether the rockslide impacts are substantial enough to influence the countywide unemployment rates is uncertain; sufficient data are not yet available to make this determination.

Communities located farther away from the rockslide area have noticed more vehicles on roads, likely due to the detoured traffic. Businesses located in those areas where traffic has increased may actually be temporarily benefiting from the rockslides.

The focus of this analysis is on the net effects due to the road closures and loss of access to markets. It also facilitates an understanding of the negative local effects. It is worth noting that the combination of the economic recession and the rockslides makes the impact to the area all the more significant. Because of the start-up costs required to open a business, it is much more difficult to reopen a business than it is to close one. As a result, businesses that are forced to close are not likely to reopen, even after the rockslides are cleared.

Based on findings from interviews with nearly 30 businesses in Bradley, Cherokee, Coker, Hamilton, Haywood, and Polk Counties, economic activity has decreased in the areas most impacted by the rockslides, as compared to the same time period last year. More specifically:

- Revenue has decreased by 50 to 80 percent for hotels, motels and inns.
- Restaurant and retail business is down a range of 30 to 90 percent.
- Gas stations are pumping 25 percent less fuel.
- A local hospital is losing \$200,000 per month in revenue.

Throughout the interview process, businesses made a point of saying how thankful they were that the rockslides occurred during their typically slower season. US-64 is expected to be reopened in mid-April, and the road affected by the I-40 rockslide is anticipated to be opened by the end of April. Businesses involved in tourism indicated numerous times that an extended road closure, much beyond March, would impact their revenue. They also indicated that they were concerned about the lag between the reopening of the roads and the public's perception that the road, and their business, was open. There was a real sense that these businesses were going to get by, but barely.

Several businesses and organizations that were interviewed suggest that the rockslides and road closures are reasons that alternate routes need to be considered.² Specifically, the November rockslides may strengthen the case for completing Corridor K, which would connect Cherokee County to Cleveland, Tennessee.³

Transportation Cost Impacts. In addition to the rockslide impact on businesses, significant transportation costs have been imposed on the region due to the transportation system

² Officials seeking help for stores on U.S. 64 West, Business owners say rockslide is causing hardships, by Dwight Otwell, February 23, 2010, Cherokee Scout, CSThttp://cherokeescout.com/articles/2010/02/26/news/doc4b8447195860d291659023.txt

³ Rock slides shut down gorge, U.S. 64 West through Ocoee Gorge closed for at least 8 weeks, by Scott Wallace, November 18, 2009, Cherokee Scout, http://www.cherokeescout.com/articles/2009/11/19/news/doc4b031fe9280ef374408117.txt

disruption that the rockslides caused. Because sections of US-64 and I-40 have closed, traffic has been diverted. This has increased the vehicles miles traveled, and the congestion and travel time for users of the region’s roadways. It’s estimated that during the course of the road closures, \$197 million in transportation costs have been imposed on the region based on an increase of 132.9 million miles of travel and 2.6 million additional hours of travel.

Total transportation costs imposed on the region as a result of the I-40 and US-64 rockslides are shown in Table 1. As a result of the rockslides and associated detours, \$197 million in costs have been imposed on the region. These transportation costs are based on an increase of 132.9 million miles of travel and 2.6 million additional hours of travel. Nearly 90 percent of these costs are associated with the I-40 rockslide and detour routes. The costs imposed on the more rural US-64 rockslide-impacted area are not insignificant, however. More than \$22 million in costs are attributable to the rockslide in that area and the diversion of traffic to alternate routes.

Of note, 28 percent of the VHT impacts are to truck travel but 47 percent of the economic value of costs is estimated to be borne by trucks. This is an indication of the impact to trade and the important role these Appalachian highway facilities play in connecting markets regional and national markets. The higher costs are due to higher values of time for business travel plus higher per miles costs in terms of fuel consumption, emissions and pavement damage.

Table 1: Total Transportation Costs of I-40 and US-64 Rock Slides

	I-40 Rockslide	US-64 Rockslide	TOTAL
Vehicle Operating Costs	\$56.9	\$7.2	\$64.1
Diversion Travel Time Costs	\$65.2	\$10.7	\$75.9
Emissions Costs	\$4.5	\$0.5	\$5.0
Congestion Travel Time Costs	\$43.8	\$3.5	\$47.2
Pavement Maintenance Costs	\$4.6	\$0.3	\$4.9
TOTAL	\$174.9	\$22.1	\$197.0

Source: HDR Decision Economics calculations

The following section details the approach used to determine the economic and transportation impacts of the I-40 and US-64 rockslides.

2. Approach

HDR|Decision Economics was engaged by the Appalachian Regional Commission (ARC) to study the economic and transportation costs of the two rock slides and road closures connecting eastern Tennessee and western North Carolina.

2.1 Local and Regional Impacts

To gauge the extent of the local and regional economic impact on the areas around the rockslides, HDR:

- Obtained information from and observations of Local Development Districts (LDD) directors;
- Conducted phone interviews of businesses in the region;
- Collected historical and current economic data for the counties most likely impacted by the rockslides; and
- Compiled articles and other materials related to the rockslides.

HDR worked with the ARC and selected local development districts (LDDs) in Tennessee and North Carolina to help determine the extent of the economic impact on the rockslide areas. LDDs provided their observations and information related to the rockslide areas. The purpose of the interviews was to determine recent business trends and to isolate the economic and transportation effects of the closure from the broader economic recession. The LDDs contacted were:

- Land-of-Sky Regional Council, Asheville, NC
- Southwestern Commission, Sylva, NC
- High Country Council of Governments, Boone, NC
- East Tennessee Development District, Alcoa, TN
- First Tennessee Development District, Johnson City, TN
- Southeast Tennessee Development District, Chattanooga, TN
- Cocke County Partnership, Newport, TN

The LDDs included in the study were chosen by ARC because they are closest to the rockslide impacted areas. Several of the LDDs provided contacts for businesses they believed to be potentially impacted by the rockslides. In some cases, the LDD director reported that the district had not been significantly impacted by the rockslides and associated detours. The LDDs indicating significant economic impacts from the road closures include:

- Southeast Tennessee Development District – affected by the US-64 rockslide
- Southwestern Commission – affected by both US-64 and I-40 rockslides
- East Tennessee Development District – affected by the I-40 rockslide

Through a series of phone interviews with businesses and local economic development experts, HDR collected information on the economic impacts of the rock slides on business sales, jobs, access to markets, and shipping cost premiums. The results of these interviews are a combination of qualitative and quantitative findings based on contacting 54 businesses and receiving input or feedback from 32 local business organizations. The economic impacts represent changes in economic activity during the road closure compared to the prior year.

Economic data for those counties located in closest proximity to the rockslides was compiled with detailed analysis provided in Appendix A. A list of the businesses that were contacted for interviews, as well as a list of those that responded, is provided in Appendix B of this report. A review of articles related to the rockslides was also conducted, and the results of this research are included throughout the report.

2.2 Transportation Costs

The US-64 and I-40 rockslides have closed sections of these routes for nearly six months resulting in a significant loss of transportation mobility, connectivity and access in the region. Tourists, residents, and businesses that rely on these roadways are being diverted to alternate routes. For most of these diverted travelers, the alternate routes are longer distances and more time-consuming. These factors increase costs on: the diverted traveler; the traveler who had been using the alternate routes prior to the rockslides; and the region as a whole.

HDR applied standard traffic modeling equations and analysis to estimate the costs to autos and trucks for each road closure and the diverted routes. The transportation costs are measurable, based on traffic counts on the affected roadways before and after the rockslides.

When combined with other data related to speed of travel and route length, estimates of the change in vehicle hours traveled (VHT) and vehicle miles traveled (VMT) can be made.

The Tennessee Department of Transportation (TDOT) and the North Carolina Department of Transportation (NCDOT) conduct annual counts of traffic on the states' roadways. The DOTs provided traffic count data for 2008, which was adjusted to reflect the 2009 pre-rockslide levels of traffic on the affected roadways. They also provided traffic count data that was collected post-rockslide. This information was then used to estimate the change in traffic and miles traveled attributable to the rockslides and associated detours.

Combined with Federal Highway Administration (FHWA) and other industry-accepted data, HDR estimated the most relevant transportation costs:

Vehicle Operating Costs: The rockslides have altered the way that travelers reach their destinations in the region. Vehicles that traveled the now closed sections of I-40 and US-64 are increasing the traffic on alternate routes. This impacts the diverted vehicles in that fuel and oil expenses, the costs associated with vehicle maintenance and repair, vehicle depreciation, and the costs of vehicle tire wear and tear are increased when vehicles must travel longer distances to reach their destinations.

Diversion Travel Time Costs: The time to travel (VHT) increases for users of the I-40 and US-64 sections of road that have been closed. These diverted roadway users must use alternate routes that are more time consuming for them. Their time has a value and, if it is taking longer for them to reach their destination, this is a cost that needs to be considered when evaluating the total effect of the rockslides on the region.

Emissions Costs: Because of the road closures, the total truck and auto vehicle miles traveled (VMT) increases. There are emissions costs that are imposed on society as a result. Emissions measured in this report include Volatile Organic Compounds (VOC), Carbon Monoxide (CO), Carbon Dioxide (CO₂), Nitrogen Oxide (NO_x), Sulfur Dioxide (SO₂), and Particulate Matter (PM), varying by auto and truck. Truck emission costs are greater than auto emission costs.

Congestion Travel Time Costs: The detour routes were being utilized by some roadway users, even before the rockslides. These users are now being affected by the influx of new roadway users who are utilizing these roads to divert around the rockslide impacted area. This increased congestion on the roads has a cost to incumbent users. It now takes these users longer to reach their destination and this extra time imposes a cost on those users due to the value of their time.

Pavement Maintenance Costs: When traffic increases on a particular roadway, pavement maintenance increases as well. The increased maintenance requirements come with a cost, based on the number of additional miles that roadway users are adding to their trips when they opt to use one of the routes currently serving as a rockslide detour. Additional trucks impose a greater cost to pavement maintenance than do additional autos.

The transportation costs described above are measurable, based on traffic counts on the affected roadways before and after the rockslides. When combined with other data related to speed of travel and route length, estimates of the change in vehicle hours traveled (VHT) and vehicle miles traveled (VMT) can be made.

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Using Federal Highway Administration (FHWA) and other industry-accepted data, vehicle operating costs, travel time costs, and pavement maintenance costs were calculated. The results of this estimation are provided later in the report.

3. Local and Regional Impacts

This section of the report discusses the impact of the rockslides and detours on the local and regional economies. Information gathered through the interview and research process is included, and the effect on jobs, business sales revenue, and other factors is described.

3.1 Interstate 40 (I-40) Rockslide Background

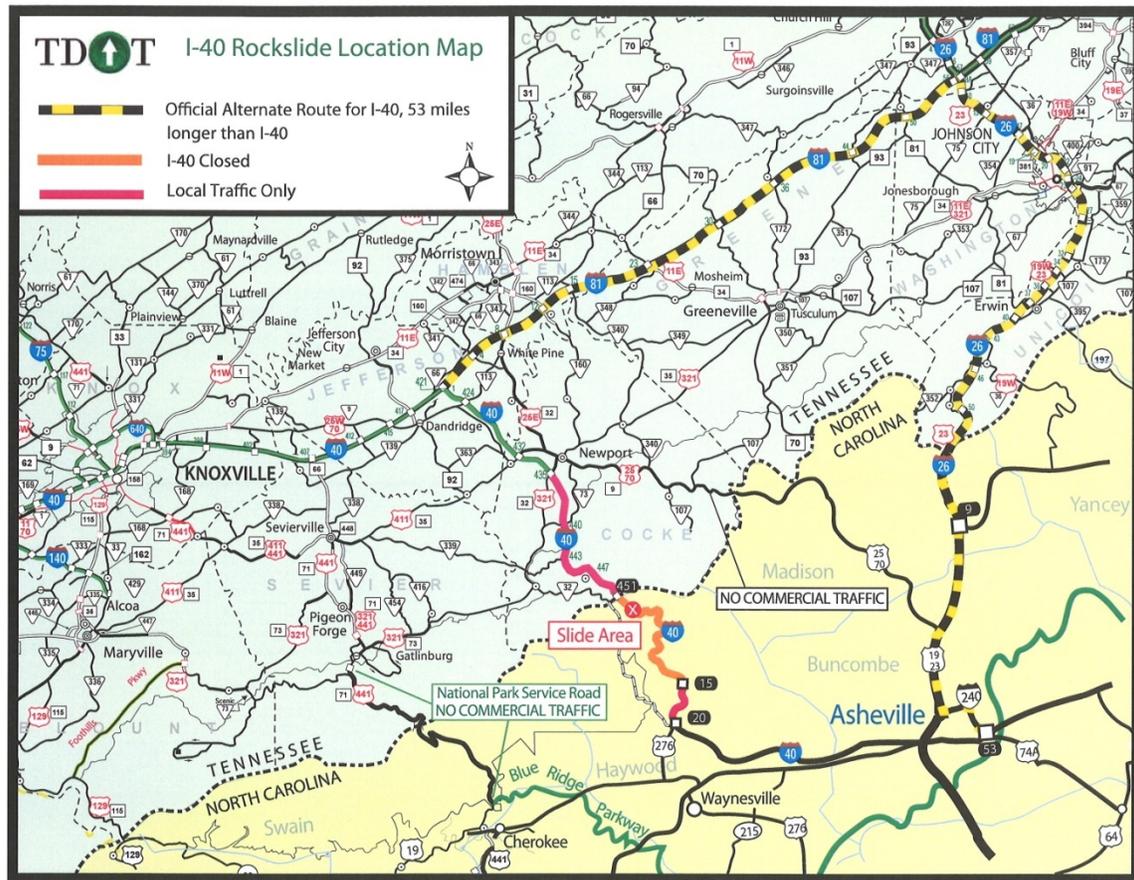
A 150 foot tall rockslide buried a portion of I-40 near the Tennessee line on October 25, 2009, and detours were established to divert traffic. The North Carolina Department of transportation indicates that I-40 will not open before late April because winter weather has slowed work on clearing the rockslide debris. Originally, the rockslide clean up was to be finished and the interstate reopened by the end of March. The cost of the cleanup still stands at \$10 million.⁴ There are several detours in the area to divert travelers away from the rockslide:

- **Official detour.** From North Carolina to Tennessee, travelers divert to Route 19/23 north to I-26 until they intersect with Interstate 81. Once they meet I-81, they travel southwest on I-81 reconnecting with I-40. This route diverts travelers out of Haywood and Coker Counties.
- **Alternate route #1** (no commercial traffic): Directs travelers from North Carolina to Tennessee to take I-240 to Route 19/23 to Route 25/70. This takes them through Newport, Tennessee, and reconnects them with Route 40. This route diverts travelers around Haywood County.
- **Alternate route #2** (partially closed to commercial traffic): This detour traverses part of the Blue Ridge Parkway and directs travelers from NC to TN to take Route 276 to Route 19 through Cherokee, North Carolina. Travelers then connect to Route 321/441, connecting to Route 66 and ultimately to Route 40. This route diverts travelers around Coker County.

Figure 2 shows the location of the I-40 rockslide, the official detour, and the roads associated with the alternate detours.

⁴ *Bad weather pushes I-40 opening to April*, by Jon Ostendorff, February 23, 2010, Citizen-Times.com, <http://www.citizen-times.com/apps/pbcs.dll/article?AID=2010100223045>

Figure 2: Interstate 40 Rockslide Detours



Source: Tennessee Department of Transportation

The I-40 rockslide occurred in Haywood County, North Carolina, between NC exit 15 and TN exit 451. It is approximately 50 miles away from Asheville, NC, and the section of the interstate that is closed is located in Haywood County. In much of Coker County, Tennessee, travel on I-40 is limited to local traffic only. Not surprisingly, the LDDs and other individuals familiar with the area and the rockslide detours indicate that the counties most adversely impacted are Coker and Haywood Counties.

As a first step in the interview process, the top ten largest employers in Haywood (see Table 2), and Coker Counties (see Table 3) were determined. For our analysis, government and educational facilities were not contacted. Evergreen and Haywood Regional Medical Center were contacted, however, because they employ large numbers of people and rely significantly on a well-functioning transportation system to provide their products and services.

Evergreen is the second largest employer in the county, with more than 1,000 employees. This pulp and paper mill and manufacturer of paper and paper products has been significantly impacted by the I-40 rockslide. Product delivery takes longer and is more costly than it was prior to the rockslide. In contrast, Haywood Regional Medical Center has not been impacted by the rockslides. A complete discussion of the impact to these employers and others is provided later in the report.

Table 2: Haywood County Top Ten Largest Employers

Business	Industry	Employees
Haywood County Schools	Education	1,380
Evergreen, Inc. (Canton & Waynesville)	Paper Products	1,116
Haywood Regional Medical Center	Health Care	729
Haywood County Government	County Services	603
Haywood Vocational Opportunities	Disp. Med. Supplies	320
Lake Junaluska Assembly	Resort, Conf. Center	200
Haywood Community College	Higher Education	158
Consolidated Metco	Plastic Molding, Truck Parts	141
General Dynamics	Defense Contractor	134
Mountain Projects	Community Action Ag.	122

Source: Haywood County Economic Development Commission

Businesses also have been impacted in Cocke County, Tennessee, which abuts Haywood County. Some of those businesses are included in Table 3, which presents the largest employers in Cocke County. Schools and government entities were not contacted for this analysis. Neither were “big box” stores such as Wal-Mart and Lowes. Efforts were made to include the remaining businesses in the analysis, but contact information for some of the businesses was not readily available. For example, Food City and American Appliance Products were not included in the analysis. Although larger businesses were contacted, many of the businesses most impacted by the rockslides were smaller in size than these employers. A complete discussion of the interview results is provided later in the report.

Table 3: Cocke County Top Ten Largest Employers

Business	Industry	Employees
Cocke County Schools	Education	661
ConAgra Grocery Products	Packaged Food Products	475
Wal-Mart	Retail	375
Baptist Hospital of Cocke County	Religion	335
Cocke County Government	Government	220
Food City	Grocery	214
Sonoco Products	Manufacturer	171
Lisega, Inc.	Manufacturer	170
American Appliance Products	Appliances	165
Lowes Home Improvement	Retail	145

Source: Cocke County Partnership

3.1.1 I-40 Rockslide Economic Impact Interview Findings

The I-40 rockslide occurred at mile marker 2.6, about 50 miles west of Asheville, North Carolina, near the Tennessee border. The highway is one of the state’s key trucking routes and is used

by tourists and others traveling to the mountains, Tennessee and beyond. The recommended detour for vehicles traveling west takes travelers about 135 miles out of their way.⁵

The closure of a section of I-40 has impacted businesses, residents, and tourists in the area. The businesses that appear to have been most adversely affected are the restaurants, gas stations, motels and tourist-oriented businesses that rely heavily on traffic using I-40.

Economic development professionals in the area have indicated that most restaurants and hotels in Cocke County have suffered a 25 to 30 percent decline since the rockslide.⁶ Cocke County motels that typically make \$500,000 to \$700,000 in annual revenue are reporting that their revenue since the rockslide is down 50 to 80 percent as compared to the same time last year. The impact to hotels is corroborated by the 30 percent decrease in hotel tax revenue for Cocke County during the first full month following the rockslide.⁷ Staffing has been affected as well. One motel that typically has 10 employees is now down to only three.

Manufacturers and businesses that rely on the transportation of goods also have experienced adverse economic impacts due to the I-40 rockslide. A local distributor has experienced transportation cost increases in the range of \$3,000 to \$5,000 monthly for additional fuel, maintenance, and related transportation expenses. A large manufacturer, Evergreen Packaging, has incurred an additional \$60,000 per month in transportation costs since the I-40 rockslide.

These impacts and others are described more completely in the following section.

Tourism and Recreation

This region in North Carolina and Tennessee relies heavily on tourism and with sections of I-40 closed, some communities are not being reached by visitors. Several tourism reliant businesses that have been able to stay in business at expressed concern about a “lag” between the roadway reopening and the tourists realizing that it is open. With I-40 not expected to reopen before the end of April, some tourist-oriented businesses will be hurt during the beginning of their busiest season.

A charter bus company located in the area reduced the number of trips it makes to Harrah's Casino in Cherokee, in response to the rockslides. The trip usually takes two hours, but it now takes between four and five hours because of the rockslide detours and extreme weather experienced this winter. Some of the alternate routes are treacherous with poor weather conditions. The business usually employs 11 people, but has had to let go of five individuals. Since January 2010, the company estimates it has lost \$2,500 per week in revenue.

A recreational vehicle park in Haywood County estimates that its revenue is down \$6,000 in March 2010 alone. Approximately 40 percent of this decrease is attributable to the rockslide, according to the park. The RV park's camping nights were down 40 percent post-rockslide, and this reduction in business has been sustained. The RV park receives a large percentage of its campers from Florida, and these visitors tend to travel north in the early Spring. The park

⁵ Rockslide Closes I-40 Near Tennessee, by Ely Portillo, Charlotte Observer, Posted: Monday, Oct. 26, 2009, <http://www.charlotteobserver.com/2009/10/26/1019615/rockslide-closes-i-40-near-tennessee.html>

⁶ ARC to fund study: On rockslide's impact on Cocke County, The Newport Plain Talk, March 12, 2010, <http://www.newportplaintalk.com/story/31153>

⁷ Rock slide's economic impact a 'mixed bag' for Cocke County, by Jim Matheny, 1/18/2010, <http://www.wbir.com/money/story.aspx?storyid=111081&catid=92>.

anticipates that the impact on revenue will increase as their busy season approaches, unless the rockslides and road are cleared relatively soon.

A golf resort in the area indicated that they have spent more on advertising this year than last year, in an effort to target customers in the Atlanta, Raleigh, and Charleston area. The additional advertising expense is a direct consequence of the rockslide. Despite these efforts, the resort has had to lay off 10 people since the rockslide and business is down 15 to 20 percent. According to the owner, they anticipate a 30 percent revenue reduction moving into April, which tends to be a busier time of year for the resort. The resort estimates that it has lost approximately 500 room nights due to the rockslide. Although specific transportation cost increases were not available, the resort owner indicated that suppliers were charging more because of the transportation cost increases they were incurring. For example, the resort's food supplier comes from Knoxville. Typically this is a one hour trip, and it is now three hours.

Hotels and Motels

Hotels and motels in Cocke and Haywood counties have experienced significant losses in revenue as compared to last year due, in large part, to the rockslides. Several have reduced their staff by more than half, and all those interviewed are booking fewer rooms since the rockslide.

One motel indicated that they are booking 10-12 fewer rooms each night since the rockslide, which is significant because this motel normally sells 20 rooms each night. In Haywood County, inns have been significantly impacted by the road closure. Owners are completing the maintenance, painting, and yard work themselves, because revenues are so reduced. One inn reported that business was down 50 percent since the rockslide. The business of another is down 70 percent.

Restaurants and Local Services

Restaurants in the area also have suffered. Brandywine Creek, a restaurant just off the interstate in Newport, opened two months before the rockslide. The restaurant has a small staff, but still had to let 2 people go.⁸ Shortly after the rockslide occurred, business at the restaurant dropped by 50 percent and has been recovering very slowly since. Pilot Travel Center, a truck stop in Waynesville near exit 24, and the Pilot convenience store have experienced a decline in business as well.⁹

A Cocke County gas station has lost \$555,000 in revenue since the rockslide. According to the owner, the diesel business is very weak. They typically have 10 to 12 employees, and they now have 8 to 10. In addition, they close two hours earlier than they have historically.

Manufacturers

Some manufacturers in the area have experienced measurable transportation cost increases as a result of the rockslide and associated detours. One company indicates that their transportation costs have increased by \$1,000 per week since the rockslide. A local distributor has experienced similar cost increases, in the range of \$3,000 to \$5,000 monthly for additional fuel, maintenance, and related transportation expenses. Fortunately, neither of those businesses has had to lay employees off. Other local manufacturers have indicated that they

⁸ I-40 rockslide still hurting Cocke County businesses, by Josh Ault, February 23, 2010, 6 News Reporter, <http://www.wate.com/Global/story.asp?S=12032772>; follow up call with Brandywine Creek.

⁹ Haywood County braces for economic impacts of prolonged I-40 closure, by Bibeka Shrestha, October 28, 2009, http://www.smokymountainnews.com/issues/10_09/10_28_09/fr_i40_impact.html.

have shifted their distribution to other facilities or passed the additional transportation costs on to their customers. This reaction to the current situation suggests that logistics and alternative transportation options may be sub-optimal.

One of the largest employers in Haywood County, Evergreen Packaging, has incurred an additional \$60,000 per month in transportation costs since the I-40 rockslide. Evergreen is a pulp and paper mill and paper products manufacturer with approximately 20 percent of its inbound and outbound freight using I-40 through the gorge. Evergreen has been directing its drivers to divert to I-26 until they intersect with Interstate 81. Once they meet I-81, they travel southwest on I-81 and reconnect with I-40. The detour means that trucks travel an additional 110 miles one way.

Evergreen attributes this additional transportation cost entirely to the rockslide and associated road closure. Despite the cost increase, Evergreen has not experienced any revenue decreases or laid off any of its employees. In terms of commuting time, only a few of the company's employees reside in Cocke County and most are familiar with back road routes that avoid the rockslide impacted area.

Oaks Unlimited, also located in Haywood County, has incurred additional transportation costs since the rockslide as well. Trips from Tennessee that used to take an hour and a half are now taking three and a half hours. This represents a \$200 per truckload additional cost for this business and five trucks travel daily on the affected route.

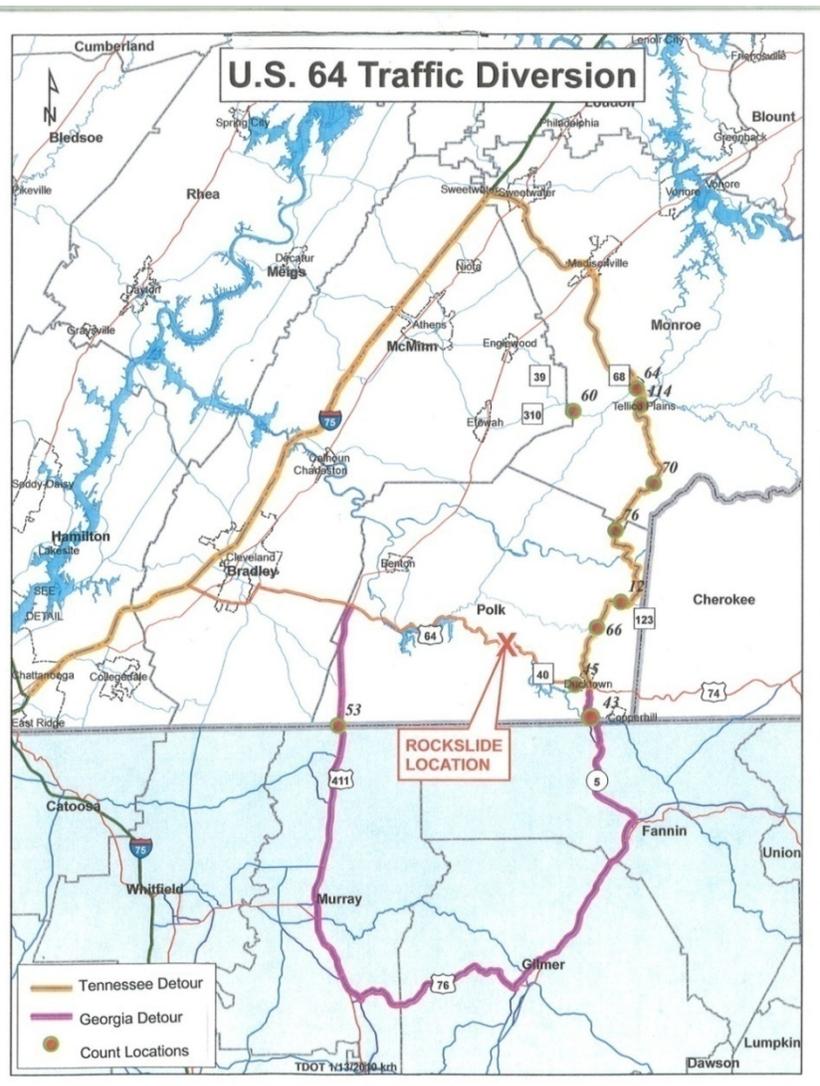
3.2 US-64 Rockslide Background

A second rockslide, which occurred on November 10, 2009, in the Ocoee Gorge buried a portion of US 64 in Polk County under 30,000 cubic yards of rock and debris.¹⁰ The Tennessee Department of Transportation expects the clean-up of the rockslide to be complete by mid-April. The US-64 rockslide closed the road connecting Cleveland and Chattanooga, Tennessee, to Cherokee County in North Carolina. Several detours are available and shown in Figure 3:

- **Suggested detour through Tennessee:** Travelers from North Carolina take US 74 to State Route 68 north through Polk and Monroe Counties to I-75 in Sweetwater. From Chattanooga and Cleveland, Tennessee, travelers take I-75 north to Exit 60, State Route 68. Travelers then go south on Route 68 through Monroe County then Ducktown into Polk County.
- **Suggested detour through Georgia:** Travelers take State Route 5 south to US76. From there, travelers head north on US411 into Tennessee.

¹⁰ Rock slides shut down gorge, U.S. 64 West through Ocoee Gorge closed for at least 8 weeks , by Scott Wallace, November 18, 2009, Cherokee Scout, <http://www.cherokeescout.com/articles/2009/11/19/news/doc4b031fe9280ef374408117.txt>

Figure 3: US-64 Rockslide Detours



Source: Tennessee Department of Transportation

The US-64 rockslide near the Ocoee2 Dam in November occurred in Polk County, TN, closing the road at mile marker 17.6.¹¹ The counties most impacted by the rockslide are Polk County, TN, and Cherokee County, NC.

The largest employers in Cherokee County are presented in Table 4, and Table 5 lists the top ten largest employers in Polk County.

Murphy Medical Center and the Cherokee County Board of Education are the two largest employers in Cherokee County. Several manufacturing businesses also employ a significant number of people. Although several of these larger employers were contacted for this report, those that responded indicated that they had not been negatively impacted by the rockslides. In this county, it seems that the smaller businesses have suffered more significantly.

¹¹ <http://www.visitnc.com/advisories/view/6>

Table 4: Cherokee County Top Ten Largest Employers

Business	Industry	Employees
Murphy Medical Center Inc	Education & Health Services	500-999
Cherokee County Board Of Education	Education & Health Services	500-999
Wal-Mart Associates Inc	Trade, Transportation, & Utilities	250-499
Cherokee County	Public Administration	250-499
Tri County Community College	Education & Health Services	100-249
Sioux Tools Inc	Manufacturing	100-249
Ingles Markets Inc	Trade, Transportation, & Utilities	100-249
loi Enterprises Inc	Manufacturing	100-249
Indian Head Industries Inc	Manufacturing	100-249
Lowes Home Centers Inc	Trade, Transportation, & Utilities	100-249

Source: Cherokee County Government

Polk County's top ten largest employers (Table 5) are led by Copper Basin Community Hospital. Based on interviews conducted for the report, this hospital has suffered tremendously from the rockslides and road detours. For example, their monthly revenue has declined by \$200,000 since the rockslides. K&S Tank Lines also has been impacted by the rockslides. Transportation costs to this company are approximately \$1,500 per day more than they were prior to the rockslides. Of the employers shown in the table, only the hospital and K&S were contacted. Contact information was available for these two businesses, and the LDDs recommended including them in the analysis. A complete discussion of the experiences of these businesses and others is provided later in the report.

Table 5: Polk County Top Ten Largest Employers

Business	Industry	Employees
Copper Basin Community Hospital	General Hospital	110
Angio Systems, Inc.	Manufacturer - cotton surgical drapes	58
Cg Roxane, LLC	Manufacturer - pasteurized water Manufacturer - textile military insignia; manufactures women's & misses' outerwear; manufactures men's & boys' work clothing	50
Powell Army Navy Surplus, Inc.	Holding Company	50
Growth Management Services, Inc.	Manufacturer - plastic containers; manufactures plastic bags	48
Preferred Medical Products		45
Nantahala Outdoor Center	Sport/Recreation Camp	40
Horn's Creek Cabins & Lodge	Hotel/Motel Operation	30
Terry Woody, Inc.	Wholesale Books/Newspapers	30
K & S Tank Lines, Inc.	Trucking Operator-Nonlocal Local Trucking Operator	21

Source: TN Chamber of Commerce & Industry, Department of Economic & Community Development

3.2.1 US-64 Rockslide Economic Impact Interview Findings

The US-64 rockslide occurred in Polk County, TN, and blocks the shortest route from the eastern communities of Copperhill, TN, and Ducktown, TN, to the western communities of Cleveland and Chattanooga. This is significant because Cleveland and Chattanooga are the region's principal shopping, health care and employment hubs. Travel on US-64 usually takes 50 minutes from Ducktown to Cleveland. The two best alternates take more than an hour and 45 minutes and require an additional 90-100 miles of driving.¹²

Economic development professionals in the US-64 rockslide impacted area have suggested that there will be relatively little long term detrimental impact on the region's economy. Short term, however, this is not the case. Some businesses have been substantially impacted and are relying heavily on the swift removal of rockslide debris to stay in business. If the roads remain closed for much longer, several businesses are likely to close their doors or experience drastic decreases in the level of business.

Businesses in the communities of Copperhill and Ducktown have had to close or significantly shorten their hours due to a lack of customers. Trade at markets and convenience stores has been significantly reduced. One store is losing \$7,000 per week, and the owner has been cutting employee hours. Another store has indicated that business is down by 80 percent.

¹² Economic "devastation" in Polk after rockslide, by Adam Crisp, Friday, Dec. 4, 2009, Chattanooga Times Free Press, <http://www.timesfreepress.com/news/2009/dec/04/economic-devastation-in-polk-after-rock-slide/>

Overall business in Ducktown is down 30 to 40 percent since the rockslide, and tax revenues are down 25 to 30 percent.¹³

Polk County is relatively isolated even when US-64 is open. With it closed, eastern Polk County's isolation is amplified. In fact, Polk County's County Executive has emphasized that every business in the eastern part of the county has been negatively impacted by the rockslides.

For example, a retailer at the Ocoee Adventure Center typically reduces its hours during the winter months. This year, however, it closed completely for the winter because patrons were not reaching the store due to the rockslides. The store plans to reopen once the rockslides are cleared, but the complete closure of the store means that business revenues have decreased 100 percent due to the rockslide.

A trucking company in the region has incurred an additional \$1,500 per day in transportation costs due to the rockslides. The company also has noted that it has lost several business opportunities because they are unable to offer a competitive bid. Each of these possible job opportunities was worth \$250,000.

Health Care

One of the most striking impacts of the rockslide has been on the local hospital, the Copper Basin Medical Center. It is very difficult for patients and employees to reach the hospital because the travel time post-rockslide is substantially longer. In fact, one physician has been flying himself to the hospital at his own expense so that he can see his patients.

The number of clinic visits at the hospital has dropped by 70-75 percent since the rockslides, and emergency room visits have increased. One possible explanation for the latter observation is that patients are not seeing their specialists on a regular basis. As a result, their conditions are worsened and they require emergent care. The number of swing bed patients, who receive care in other hospitals and recover at Copper Basin, are also down by 50 percent. In terms of revenue, the hospital has lost \$200,000 per month since the rockslide. They have reduced their staff from 119 to 90, a loss of 29 full-time positions.

Retail

As mentioned previously, retailers in the rockslide area have been significantly impacted. Payne Tire & Grocery in Hot House reports that their business is down by as much as 80 percent. Ducktown Express oil lube is on the verge of bankruptcy.¹⁴ King's Leathercraft, which is also located on US-64, indicates that business has been reduced by 30 percent since the rockslides. The Wolf Creek Corner reports that business is down by 80 to 90 percent. Typically, this convenience store anticipates a decrease in business of approximately 20 to 30 percent during the winter months.

Restaurants have also experienced declines in business. Herb's Barbecue reported that business was down 50 percent due to the recession. The rockslide has resulted in another 40

¹³ Officials seeking help for stores on U.S. 64 West, Business owners say rockslide is causing hardships, by Dwight Otwell, February 23, 2010 8:05 PM CST, Cherokee Scout.

¹⁴ Polk County Executive

percent decrease in business for this restaurant as compared to last year.¹⁵ The Gondolier Restaurant also has experienced a 40 percent reduction in sales.¹⁶

A local gas station in Ducktown, Tennessee, reported that business was down 25 percent since the rock slide. Ocoee Express, a gas station with a Subway sandwich shop, has been impacted as well. Cougar Express has lost an average of \$50,000 in revenue per month.¹⁷

Mercier Orchards, located in Blue Ridge, Georgia, also indicates that business has been affected. Regular customers have told the orchard that the alternate routes are simply too long. This is reflected in the number of orchard visitors, which is down approximately 15 percent. In addition, their transportation costs have doubled due to the additional time required for them to make wholesale deliveries. Fortunately for the orchard, the rockslides occurred after their busy time of year.¹⁸

Tourism and Recreation

The Ocoee River in Tennessee is a popular whitewater rafting destination, and there are numerous whitewater rafting companies in the Ducktown area. Rafting trips on the Ocoee River were scheduled to begin mid-March, but TDOT officials say I-64 will not reopen until mid-April, leaving rafting companies with a month of limited business.

If the road remains closed into late spring or early summer, the rafting industry will be significantly impacted.¹⁹ That is not to suggest that this industry has not already been impacted by the rockslides and road closure. For example, the retail store owned by Ocoee Adventure Center and located at the Whitewater Center was closed for the entire Winter. There were attempts to keep the store and Whitewater open, but business was slow and the decision was made to close the store for five months. In addition, the hours of one employee were reduced by 40 percent. The store typically reduces its hours during the Winter, but it does not close. The result is a loss of 100 percent of sales revenue when compared to last year since the rockslides occurred.

Although the road is scheduled to be opened mid-April, rafting businesses have expressed their concern about the “lag” between the reopening of US-64 and the public’s awareness of the road reopening. This “lag” is quite likely to affect the early part of the rafting industry’s season.

Trucking

A trucking business in the area has reported no change in revenue but a significant increase in transportation costs. They transport approximately 10 truckloads per day and have incurred an additional \$1,500 per day since the rockslides. This company also noted that they have lost several business opportunities because they cannot offer a competitive bid. Each of these jobs was worth \$250,000. Some other trucking businesses in the region have not been impacted because they did not use US-64 in the past, or did so sparingly. As a result, they have not had to reroute or incur additional transportation costs.

¹⁵ Officials seeking help for stores on U.S. 64 West, Business owners say rockslide is causing hardships, by Dwight Otwell, February 23, 2010,

CSThttp://cherokeescout.com/articles/2010/02/26/news/doc4b8447195860d291659023.txt

¹⁶ Polk County County Executive

¹⁷ Polk County County Executive

¹⁸ Economic “devastation” in Polk after rockslide, by Adam Crisp, Friday, Dec. 4, 2009, Chattanooga Times Free Press, <http://www.timesfreepress.com/news/2009/dec/04/economic-devastation-in-polk-after-rock-slide/>

¹⁹ Polk County Executive

4. TRANSPORTATION IMPACTS OF ROCKSLIDES ON TENNESSEE AND NORTH CAROLINA

The most direct impacts imposed on the area due to the rockslides and subsequent closures of portions of I-40 and US-64 are transportation costs. The diversion of traffic off of the affected roadways and onto alternate routes results in greater traffic congestion on the alternate routes, which increases total travel time and miles traveled. This means that vehicle operating costs increase, as do the costs associated with driver and passenger travel time. More wear and tear on the highways is anticipated with heavier traffic, and the increased congestion results in higher levels of pollutants being emitted by trucks and automobiles that use the detours.

The transportation cost analysis in this report is based on traffic counts before and after the rockslides, as well as other data. For example, the Federal Highway Administration (FHWA) provides standards for the value of traveler time, vehicle operating costs, and other variables. This information, along with our estimates of the VHT and VMT change resulting from the rockslides and detours, enabled the calculation of transportation costs as shown in Tables 6 and 7.

4.1 I-40 Rockslide Transportation Costs

The total transportation cost increase due to the rockslide on I-40 is estimated to be \$174.9 million. These costs are based on over 111 million additional miles traveled and 2.2 million additional hours of travel. Based on I-40's role as a key freight and trade shipping route, the transportation costs are approximately evenly split between trucks (\$86.9 million) and autos (\$88 million).

Because of the rockslides, associated detours and additional miles of travel, vehicle operating costs in the I-40 region have increased by \$56.9 million. Fifty-two percent of these additional costs to automobiles are due to increased fuel and oil consumption. Another 47 percent of the costs are for tire wear and tear on automobiles. For trucks, 40 percent of the total vehicle operating costs are for additional diesel. Nearly 50 percent of the increased costs are for truck maintenance and repair.

More than \$100 million in costs have also been imposed on the region as a result of the increase in travel time experienced by users of I-40 and the alternate routes. Diversion travel time costs comprise \$65.2 million, and \$43.8 million is attributable to users of the alternate routes whose trips are slowed because of the heavier traffic.

Emissions costs are estimated to be \$4.5 million and pavement maintenance is estimated to cost an additional \$4.6 million as a result of the I-40 rockslide.

Table 6: Transportation Costs – I-40 Road Closure (\$Millions)

	I-40 Rockslide
Vehicle Operating Costs	\$56.9
Diversion Travel Time Costs	\$65.2
Emissions Costs	\$4.5
Congestion Travel Time Costs	\$43.8
Pavement Maintenance Costs	\$4.6
TOTAL	\$174.9

Source: HDR Decision Economics calculations

4.2 US-64 Rockslide Transportation Costs

Most of the businesses in Polk County are locally owned and not affiliated with a large corporation. With no major employer in Polk County, roughly 70 percent of the community travels outside of the county for work. Many of those commuters travel west to Cleveland, TN for their employment, which means that their commute has increased substantially. Other drivers have been impacted as well. The result is increased vehicle operating costs, travel time costs, and roadway maintenance costs estimated to total over \$22 million. These costs are reflective of 21.8 million extra miles of travel and almost 425,000 hours of travel and delay. Auto travel costs are estimated to be over \$17 million with truck costs comprising \$4.7 million.

Based on the analysis, vehicle operating costs are estimated to have increased by \$7.2 million in the area since the rockslide. For automobiles, the largest component of these costs is for fuel and oil (52%). Nearly 50 percent of the truck operating cost increase is due to increased maintenance and repair expenses, and 40 percent is for additional diesel fuel.

Diversion travel time costs associated with travelers of US-64 now utilizing alternate routes is \$10.7 million. Another \$3.5 million in travel time costs is attributable to the increased traffic on the detours. Finally, emissions costs to the region are estimated to be \$500,000. Another \$300,000 in pavement maintenance costs is also estimated.

Table 7: Transportation Costs – US-64 Road Closure (\$Millions)

	US-64 Rockslide
Vehicle Operating Costs	\$7.2
Diversion Travel Time Costs	\$10.7
Emissions Costs	\$0.5
Congestion Travel Time Costs	\$3.5
Pavement Maintenance Costs	\$0.3
TOTAL	\$22.1

Source: HDR Decision Economics calculations

4.3 Total Transportation Costs

Total transportation costs imposed on the region as a result of the I-40 and US-64 rockslides are shown in Table 8. As a result of the rockslides and associated detours, \$197 million in costs have been imposed on the region. These transportation costs are based on an increase of 132.9 million miles of travel and 2.6 million additional hours of travel. Nearly 90 percent of these costs are associated with the I-40 rockslide and detour routes. The costs imposed on the more

rural US-64 rockslide-impacted area are not insignificant, however. More than \$22 million in costs are attributable to the rockslide in that area and the diversion of traffic to alternate routes.

Thirty-three percent of the total costs are due to the increased wear and tear on the vehicles, fuel and oil expenses, and other vehicle operating expenses. More than 62 percent of the costs are associated with the increase in travel time experienced by users of the impacted roadways. The remaining five percent of costs are the result of emissions and pavement maintenance cost increases.

Table 8: Total Transportation Costs of I-40 and US-64 Road Closures

	I-40 Rockslide	US-64 Rockslide	TOTAL
Vehicle Operating Costs	\$56.9	\$7.2	\$64.1
Diversion Travel Time Costs	\$65.2	\$10.7	\$75.9
Emissions Costs	\$4.5	\$0.5	\$5.0
Congestion Travel Time Costs	\$43.8	\$3.5	\$47.2
Pavement Maintenance Costs	\$4.6	\$0.3	\$4.9
TOTAL	\$174.9	\$22.1	\$197.0

Source: HDR Decision Economics calculations

Appendix A – Analysis of Economic Conditions and Unemployment Rates

Economic Condition of the I-40 Rockslide Impacted Area

The unemployment rate in the State of Tennessee was 10.2 percent in September and October of 2009 and decreased to 10 percent in November. The unemployment rate increased to 10.6 percent for the state in December. In North Carolina, the unemployment rate was 10.7 percent in November. It also increased in December, reaching 10.9 percent by the end of the year.

Cocke County

Unlike the State of Tennessee, the unemployment rate in Cocke County decreased since January. Specifically, the rate went down by 12 percent during that time period as compared to the state's increase of 11 percent. This is quite significant, given that during the last two months of the year the unemployment rate in Cocke County grew by 10 percent.

As shown in Table 9, the November unemployment rate for the county crept up to 12.4 percent from the October rate of 12.1 percent. The December rate was 13.6 percent. The state's rate of growth during that same period was six percent. The only other county in the state to experience double digit growth in the unemployment rate during the last few months of 2009 is Sevier, which abuts Cocke County west of the rockslide.

Table 9: TN Counties in LDDs Affected by Rockslides

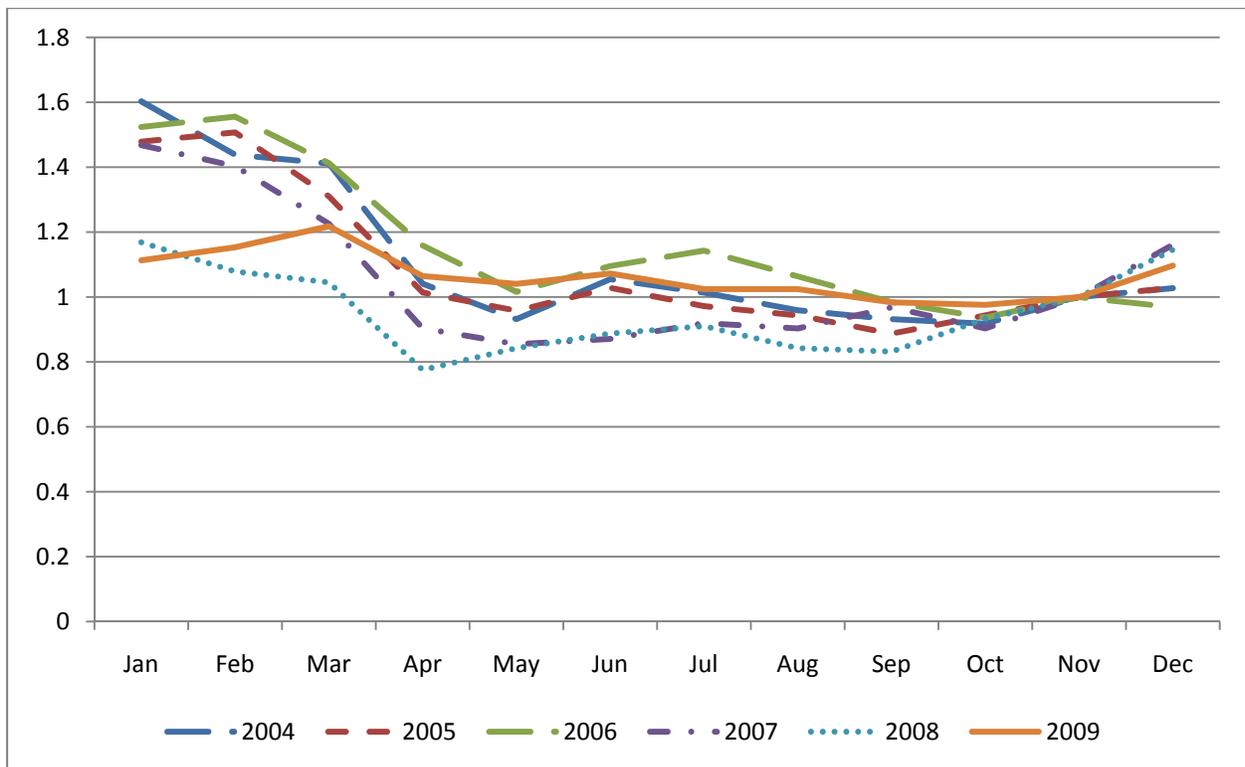
County	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Change Since Nov	Jan-Oct Change
Cocke	13.8%	14.3%	15.1%	13.2%	12.9%	13.3%	12.7%	12.7%	12.2%	12.1%	12.4%	13.6%	10%	-12%
State of TN	9.2%	9.5%	9.9%	9.7%	10.3%	11.1%	10.7%	10.7%	10.2%	10.2%	10.0%	10.6%	6%	11%
Bledsoe	13.1%	12.8%	12.9%	12.4%	13.4%	14.6%	14.1%	13.9%	13.7%	13.7%	13.8%	14.8%	7%	5%
Blount	9.1%	9.6%	10.0%	9.7%	10.1%	10.5%	10.2%	9.9%	9.3%	8.9%	9.2%	9.6%	4%	-2%
Bradley	8.3%	8.5%	9.4%	9.3%	9.5%	9.9%	9.8%	10.1%	9.3%	9.1%	9.0%	9.4%	4%	10%
Grainger	12.4%	12.9%	13.9%	13.5%	13.7%	14.2%	13.7%	14.1%	13.5%	13.3%	13.1%	13.3%	2%	7%
Grundy	12.7%	13.2%	13.7%	13.4%	14.1%	15.5%	14.9%	13.7%	13.0%	13.6%	13.2%	13.8%	5%	7%
Hamblen	10.3%	10.7%	12.1%	12.1%	12.6%	13.3%	13.0%	12.8%	12.5%	12.3%	11.9%	12.3%	3%	19%
Hamilton	7.3%	7.9%	8.0%	8.2%	8.7%	9.3%	9.1%	9.4%	8.7%	8.7%	8.4%	8.9%	6%	19%
Jefferson	11.7%	12.5%	12.9%	12.1%	12.2%	12.7%	11.8%	12.1%	11.7%	11.4%	11.7%	12.5%	7%	-3%
Knox	6.6%	7.1%	7.3%	7.4%	7.9%	8.5%	8.2%	8.7%	8.1%	7.8%	7.7%	8.1%	5%	18%
Loudon	7.7%	8.4%	9.3%	9.5%	9.6%	10.1%	10.5%	10.1%	9.5%	9.7%	9.7%	9.7%	0%	26%
Marion	10.6%	11.3%	10.7%	10.9%	12.0%	12.4%	12.2%	11.9%	12.1%	12.2%	11.8%	12.2%	3%	15%
McMinn	12.4%	12.4%	13.7%	13.6%	14.4%	14.9%	14.0%	13.8%	13.0%	12.7%	12.7%	13.1%	3%	2%
Meigs	13.6%	13.1%	14.3%	14.0%	14.7%	15.2%	14.2%	14.3%	13.6%	13.6%	13.5%	14.5%	7%	0%
Monroe	14.7%	15.9%	17.5%	17.8%	18.1%	18.6%	18.4%	16.6%	16.1%	16.0%	15.8%	15.7%	-1%	9%
Polk	11.5%	12.3%	13.5%	12.4%	12.9%	12.6%	11.9%	12.0%	11.4%	11.8%	12.3%	13.2%	7%	3%
Rhea	13.5%	12.8%	13.2%	12.6%	13.4%	14.3%	13.6%	13.9%	12.7%	12.5%	12.9%	14.0%	9%	-7%
Sequatchie	10.2%	10.8%	11.2%	11.5%	12.5%	12.3%	11.9%	12.6%	12.9%	13.2%	12.4%	13.0%	5%	29%
Sevier	12.5%	14.1%	13.3%	10.2%	9.7%	9.7%	9.1%	9.3%	9.2%	9.3%	9.5%	10.7%	13%	-26%

Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted.

Although some of the late 2009 increase in the unemployment rate for Cocke County may be attributable to the economic impact of the rockslide, it is important to note that an increase in the unemployment rate toward the end of the year is not uncommon for the county. Figure 4 compares the unemployment rate index for the county from 2004 through 2009. The index shows how significantly the unemployment rate has varied from the November, post-rockslide rate. With the limited data available, it is difficult to discern between annual trends and an actual increase in the unemployment rate due to the rockslides.

Overall, the unemployment rate for the year was relatively more stable than it had been the previous two years. As shown in the figure, the uptick in unemployment after the rockslide is actually less significant in 2009 than it was in 2007 or 2008. However, the growth in the unemployment rate is greater than it was for 2004, 2005 and 2006. As unemployment rate data for 2010 become available, it will become clearer whether the rockslide has impacted the overall rate of unemployment in the county.

Figure 4: Cocke County Unemployment Rate Index 2004-2009



Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted.

Haywood County

The unemployment rate for North Carolina fluctuated between 10 and 11 percent during 2009 (Table 10). In contrast, the Haywood County unemployment rate decreased steadily from February through September. In October, the rate began to tick upward from 8.5 percent in September to 8.9 percent in October. It continued to increase through the end of the year, reaching 10.3 percent in December. During the last two months of the year, North Carolina's rate increased two percent; the Haywood County rate increased eight percent.

The county unemployment rate is the result of several factors, including layoffs and generally slow growth in the county. An overall decline in tourism, due to the economic climate and I-40 rock slide, is also a contributor.²⁰ Jackson and Swain Counties, which border Haywood, also experienced an increase in the unemployment rate after the rockslides. Like Haywood, these counties had been experiencing declining rates of unemployment prior to the fall.

Table 10: NC Counties in LDDs Affected by Rockslides

County	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Change Since Nov	Jan-Oct Change
Haywood	10.5%	11.2%	11.1%	10.0%	9.8%	9.6%	9.4%	8.8%	8.5%	8.9%	9.5%	10.3%	8%	-15%
State of NC	10.2%	11.2%	11.0%	10.5%	11.0%	11.2%	11.1%	10.7%	10.4%	10.6%	10.7%	10.9%	2%	4%
Cherokee	15.8%	17.0%	15.4%	14.3%	15.1%	14.9%	15.0%	14.9%	14.2%	14.7%	15.0%	15.5%	3%	-7%
Clay	11.4%	12.6%	11.5%	11.2%	11.3%	11.0%	11.4%	11.0%	10.9%	11.5%	11.8%	11.6%	-2%	1%
Graham	16.4%	18.0%	16.1%	13.7%	13.3%	13.2%	13.9%	13.3%	13.3%	15.6%	15.8%	17.6%	11%	-5%
Henderson	8.8%	9.8%	9.4%	9.4%	9.7%	9.4%	9.2%	8.8%	8.6%	8.8%	8.8%	8.8%	0%	0%
Jackson	9.9%	10.5%	9.6%	8.6%	9.0%	9.1%	8.3%	7.9%	7.8%	8.2%	8.4%	9.4%	12%	-17%
Macon	11.8%	13.0%	12.2%	10.5%	10.2%	10.0%	9.6%	9.0%	9.2%	10.2%	10.7%	11.4%	7%	-14%
Madison	9.3%	10.3%	9.6%	9.4%	9.8%	9.8%	9.5%	9.5%	9.4%	9.3%	9.5%	9.7%	2%	0%
Swain	15.0%	15.8%	14.5%	12.2%	11.5%	10.0%	9.6%	9.0%	9.1%	10.1%	11.7%	14.5%	24%	-33%
Transylvania	9.4%	10.3%	9.5%	8.7%	8.9%	8.6%	9.0%	8.4%	8.5%	9.0%	9.5%	10.0%	5%	-4%
Buncombe	8.2%	9.1%	9.0%	8.5%	8.8%	9.1%	8.8%	8.4%	8.2%	8.3%	8.2%	8.3%	1%	1%

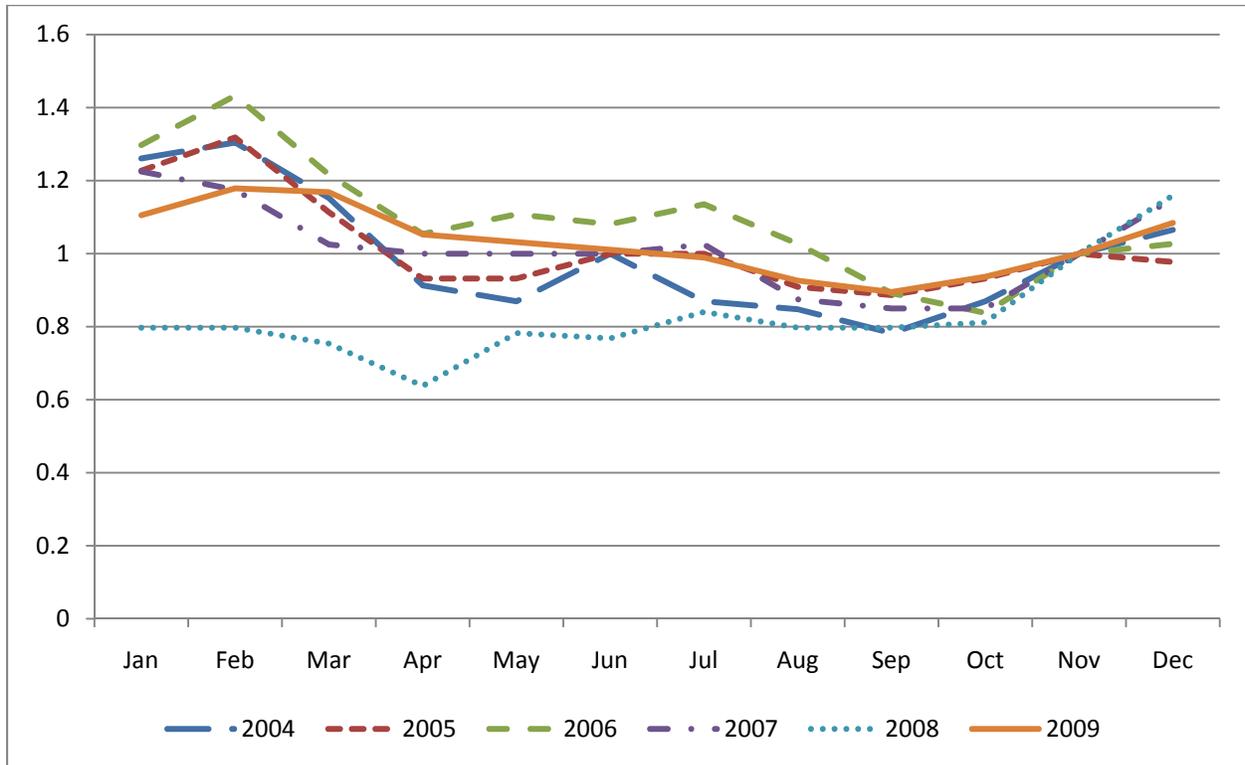
Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted.

Figure 5 provides the unemployment rate index for Haywood County. Although the unemployment rate increased post-rockslide, this trend is not uncommon for the county. As shown in the figure, the increase in the unemployment rate was actually less significant in 2009 than it had been the previous two years. Prior to 2007, however, the unemployment rate at the end of the year grew more slowly than it did in 2009.

²⁰ Haywood jobless rate inches higher, by Beth Pleming, The Mountaineer, http://www.themountaineer.com/index.php?option=com_content&view=article&id=5671:haywood-jobless-rate-inches-higher&catid=25:the-project&Itemid=27

The county unemployment rate data do not indicate an unusually significant change post-rockslide. However, the effect of events like rockslides often lag. The true impact of the rockslide on the level of unemployment in the area may not become clear until 2010.

Figure 5: Haywood County Unemployment Rate Index 2004-2009

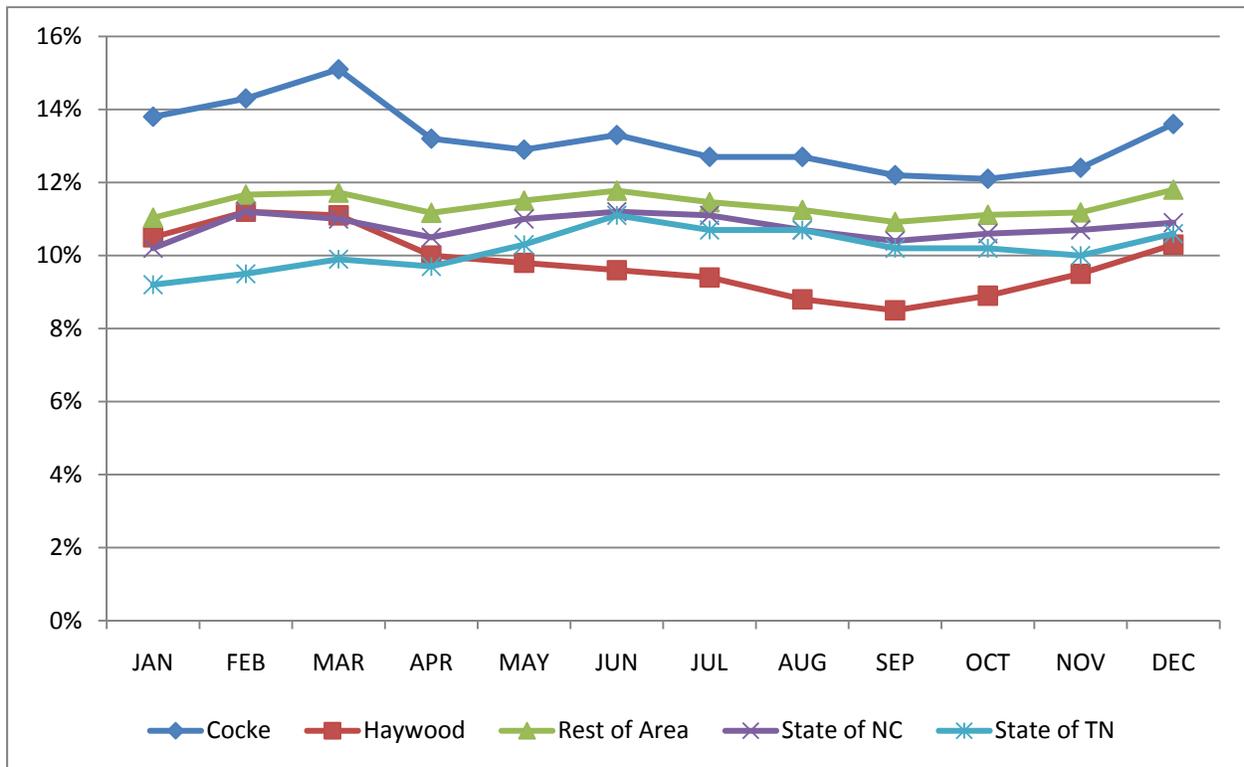


Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted

Figure 6 compares the unemployment rates of Haywood and Coker Counties to the average unemployment rate for counties considered potentially impacted by the rockslide, North Carolina, and Tennessee. As shown in the figure, the unemployment rates for the state are more stable than those for the counties. The average unemployment rates for the counties included in the study area are also relatively lower than either Coker or Haywood County.

Figure 6: 2009 Unemployment Rates

Cocke and Haywood Counties vs. States of NC and TN, Rest of Area



Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted.

Although economic data for the counties in closest proximity to the I-40 rockslides do not definitively indicate that the rockslides have impacted their overall economies, the business interviews suggest that some businesses in the area have been dramatically impacted. The following section presents the interview findings for the I-40 rockslide impacted area.

Economic Condition of the US-64 Rockslide Impacted Area

The unemployment rate in the State of Tennessee has been slowly increasing since September. Polk County’s October rate was 11.8 percent and increased by seven percent post-rockslide to the December rate of 13.2 percent. Table 11 shows the unemployment rates for Polk County and the State of Tennessee. Also shown in the table are the rates for counties considered to be potentially impacted by the rockslides.

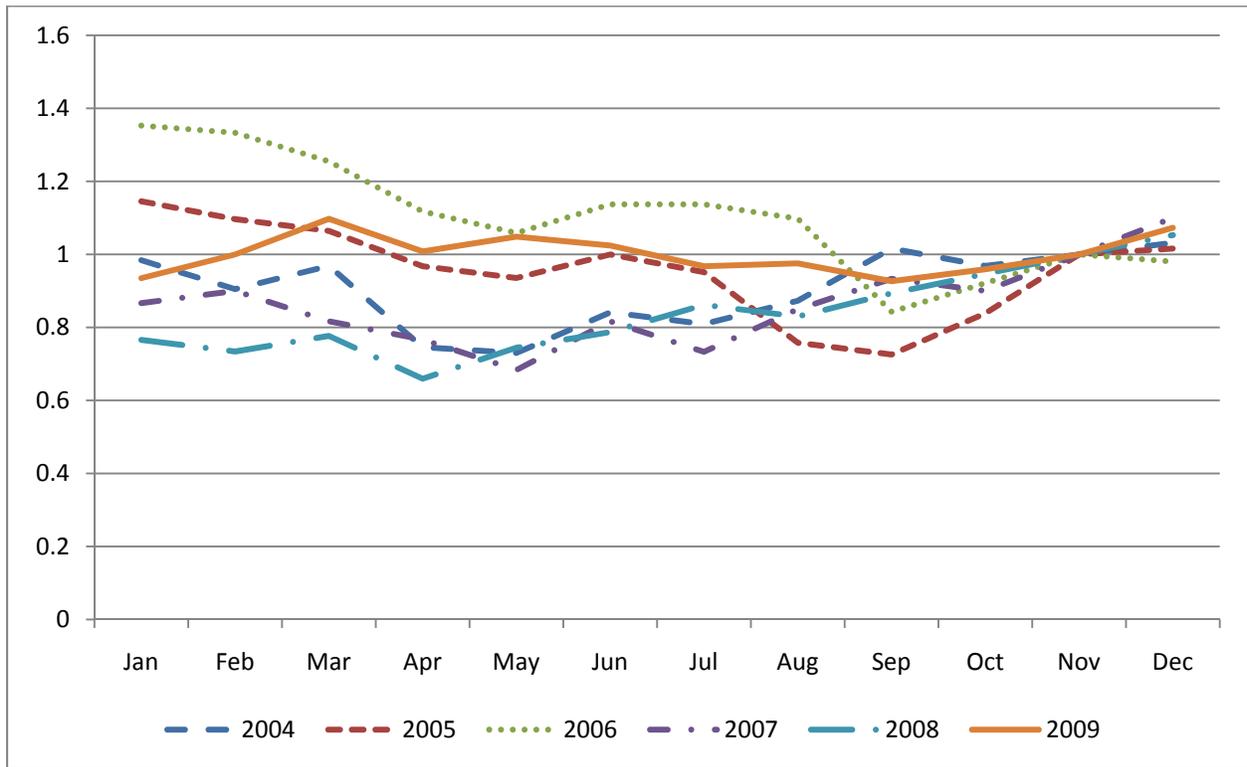
Table 11: TN Counties in LDDs Affected by Rockslides

County	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Change Since Nov	Jan-Oct Change
Polk	11.5%	12.3%	13.5%	12.4%	12.9%	12.6%	11.9%	12.0%	11.4%	11.8%	12.3%	13.2%	7%	3%
State of TN	9.2%	9.5%	9.9%	9.7%	10.3%	11.1%	10.7%	10.7%	10.2%	10.2%	10.0%	10.6%	6%	11%
Bledsoe	13.1%	12.8%	12.9%	12.4%	13.4%	14.6%	14.1%	13.9%	13.7%	13.7%	13.8%	14.8%	7%	5%
Blount	9.1%	9.6%	10.0%	9.7%	10.1%	10.5%	10.2%	9.9%	9.3%	8.9%	9.2%	9.6%	4%	-2%
Bradley	8.3%	8.5%	9.4%	9.3%	9.5%	9.9%	9.8%	10.1%	9.3%	9.1%	9.0%	9.4%	4%	10%
Cocke	13.8%	14.3%	15.1%	13.2%	12.9%	13.3%	12.7%	12.7%	12.2%	12.1%	12.4%	13.6%	10%	-12%
Grainger	12.4%	12.9%	13.9%	13.5%	13.7%	14.2%	13.7%	14.1%	13.5%	13.3%	13.1%	13.3%	2%	7%
Grundy	12.7%	13.2%	13.7%	13.4%	14.1%	15.5%	14.9%	13.7%	13.0%	13.6%	13.2%	13.8%	5%	7%
Hamblen	10.3%	10.7%	12.1%	12.1%	12.6%	13.3%	13.0%	12.8%	12.5%	12.3%	11.9%	12.3%	3%	19%
Hamilton	7.3%	7.9%	8.0%	8.2%	8.7%	9.3%	9.1%	9.4%	8.7%	8.7%	8.4%	8.9%	6%	19%
Jefferson	11.7%	12.5%	12.9%	12.1%	12.2%	12.7%	11.8%	12.1%	11.7%	11.4%	11.7%	12.5%	7%	-3%
Knox	6.6%	7.1%	7.3%	7.4%	7.9%	8.5%	8.2%	8.7%	8.1%	7.8%	7.7%	8.1%	5%	18%
Loudon	7.7%	8.4%	9.3%	9.5%	9.6%	10.1%	10.5%	10.1%	9.5%	9.7%	9.7%	9.7%	0%	26%
Marion	10.6%	11.3%	10.7%	10.9%	12.0%	12.4%	12.2%	11.9%	12.1%	12.2%	11.8%	12.2%	3%	15%
McMinn	12.4%	12.4%	13.7%	13.6%	14.4%	14.9%	14.0%	13.8%	13.0%	12.7%	12.7%	13.1%	3%	2%
Meigs	13.6%	13.1%	14.3%	14.0%	14.7%	15.2%	14.2%	14.3%	13.6%	13.6%	13.5%	14.5%	7%	0%
Monroe	14.7%	15.9%	17.5%	17.8%	18.1%	18.6%	18.4%	16.6%	16.1%	16.0%	15.8%	15.7%	-1%	9%
Rhea	13.5%	12.8%	13.2%	12.6%	13.4%	14.3%	13.6%	13.9%	12.7%	12.5%	12.9%	14.0%	9%	-7%
Sequatchie	10.2%	10.8%	11.2%	11.5%	12.5%	12.3%	11.9%	12.6%	12.9%	13.2%	12.4%	13.0%	5%	29%
Sevier	12.5%	14.1%	13.3%	10.2%	9.7%	9.7%	9.1%	9.3%	9.2%	9.3%	9.5%	10.7%	13%	-26%

Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted.

Although the unemployment rate for the county rose after the rockslide, an increase in the rate toward the end of the year is not uncommon for the county. As shown in Figure 7, the unemployment rates for 2007 through 2009 experienced increases beginning in October. The 2009 rate grew less after October than the 2007 rate but roughly the same as the 2008 rate. While this increase is not insignificant, the historical trend for the county makes it difficult to determine whether the 2009 post-rockslide increase is even partially attributable to the rockslide. As data become available for the early part of 2010, it will be more clear whether this end-of-year increase is due to the rockslides or consistent with the general trend for this county.

Figure 7: Polk County Unemployment Rate Index 2007-2009



Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted.

As shown in Table 12, Cherokee County experienced an overall decrease in its unemployment rate from January through October. During the months of November and December, the rate increased three percent. While it is noteworthy that the rate direction changed after the rockslide, Cherokee County, like Polk, generally experiences an increase in the unemployment rate the last few months of the year (Figure 8).

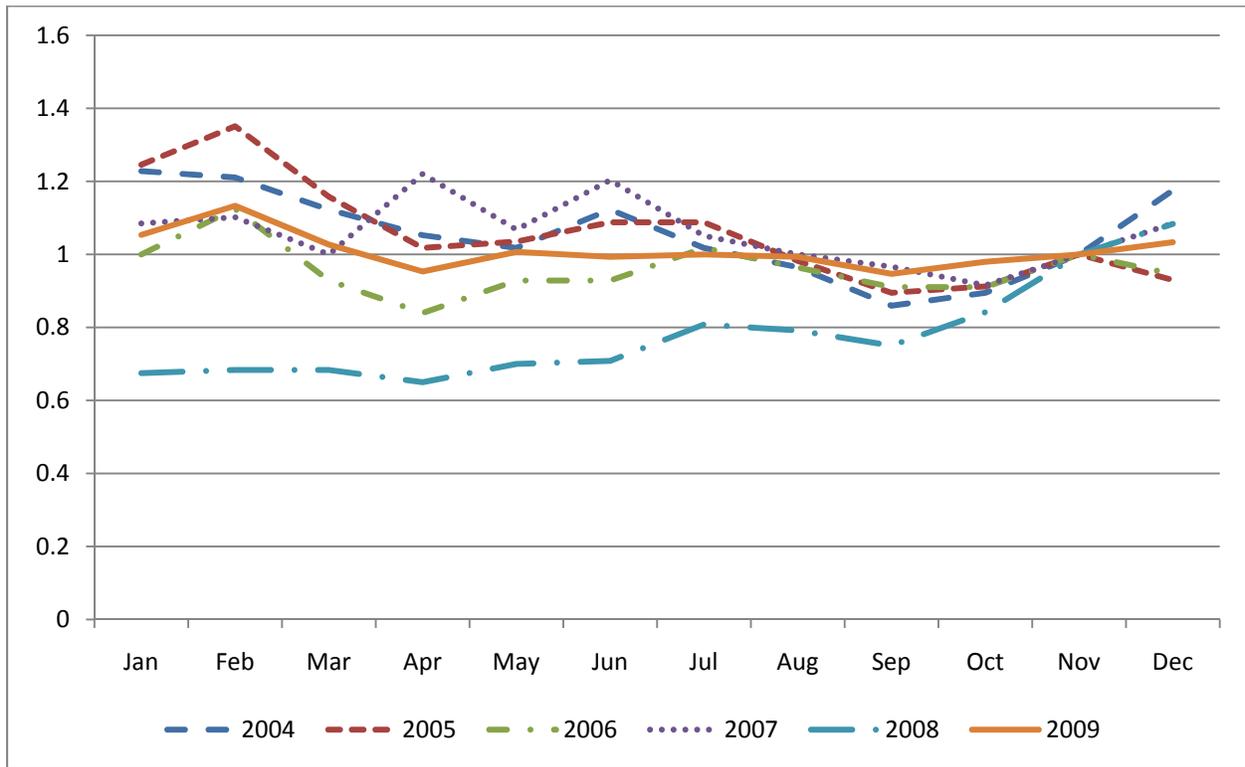
Table 12: TN Counties in LDDs Affected by Rockslides

County	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Change Since Nov	Jan-Oct Change
Cherokee	15.8%	17.0%	15.4%	14.3%	15.1%	14.9%	15.0%	14.9%	14.2%	14.7%	15.0%	15.5%	3%	-7%
State of NC	10.2%	11.2%	11.0%	10.5%	11.0%	11.2%	11.1%	10.7%	10.4%	10.6%	10.7%	10.9%	2%	4%
Clay	11.4%	12.6%	11.5%	11.2%	11.3%	11.0%	11.4%	11.0%	10.9%	11.5%	11.8%	11.6%	-2%	1%
Graham	16.4%	18.0%	16.1%	13.7%	13.3%	13.2%	13.9%	13.3%	13.3%	15.6%	15.8%	17.6%	11%	-5%
Haywood	10.5%	11.2%	11.1%	10.0%	9.8%	9.6%	9.4%	8.8%	8.5%	8.9%	9.5%	10.3%	8%	-15%
Henderson	8.8%	9.8%	9.4%	9.4%	9.7%	9.4%	9.2%	8.8%	8.6%	8.8%	8.8%	8.8%	0%	0%
Jackson	9.9%	10.5%	9.6%	8.6%	9.0%	9.1%	8.3%	7.9%	7.8%	8.2%	8.4%	9.4%	12%	-17%
Macon	11.8%	13.0%	12.2%	10.5%	10.2%	10.0%	9.6%	9.0%	9.2%	10.2%	10.7%	11.4%	7%	-14%
Madison	9.3%	10.3%	9.6%	9.4%	9.8%	9.8%	9.5%	9.5%	9.4%	9.3%	9.5%	9.7%	2%	0%
Swain	15.0%	15.8%	14.5%	12.2%	11.5%	10.0%	9.6%	9.0%	9.1%	10.1%	11.7%	14.5%	24%	-33%
Transylvania	9.4%	10.3%	9.5%	8.7%	8.9%	8.6%	9.0%	8.4%	8.5%	9.0%	9.5%	10.0%	5%	-4%
Buncombe	8.2%	9.1%	9.0%	8.5%	8.8%	9.1%	8.8%	8.4%	8.2%	8.3%	8.2%	8.3%	1%	1%

Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted.

Figure 8 presents the unemployment rate index, which shows the variability of the unemployment rate during the year as compared to the November rate. As is the case with many of the counties in the rockslide impacted area, the Cherokee County unemployment rate does typically increase toward the end of the year. The 2009 rate increase is more significant than the increases experienced in 2005 and 2006. It is less significant than 2004, 2007 and 2008. Because of this historic trend, it is difficult to say whether the increase in the unemployment rate experienced in the county at the end of the year is attributable to the rockslide. As 2010 data become available, the correlation between the rockslide and unemployment rate may become more apparent.

Figure 8: Cherokee County Unemployment Rate Index 2007-2009

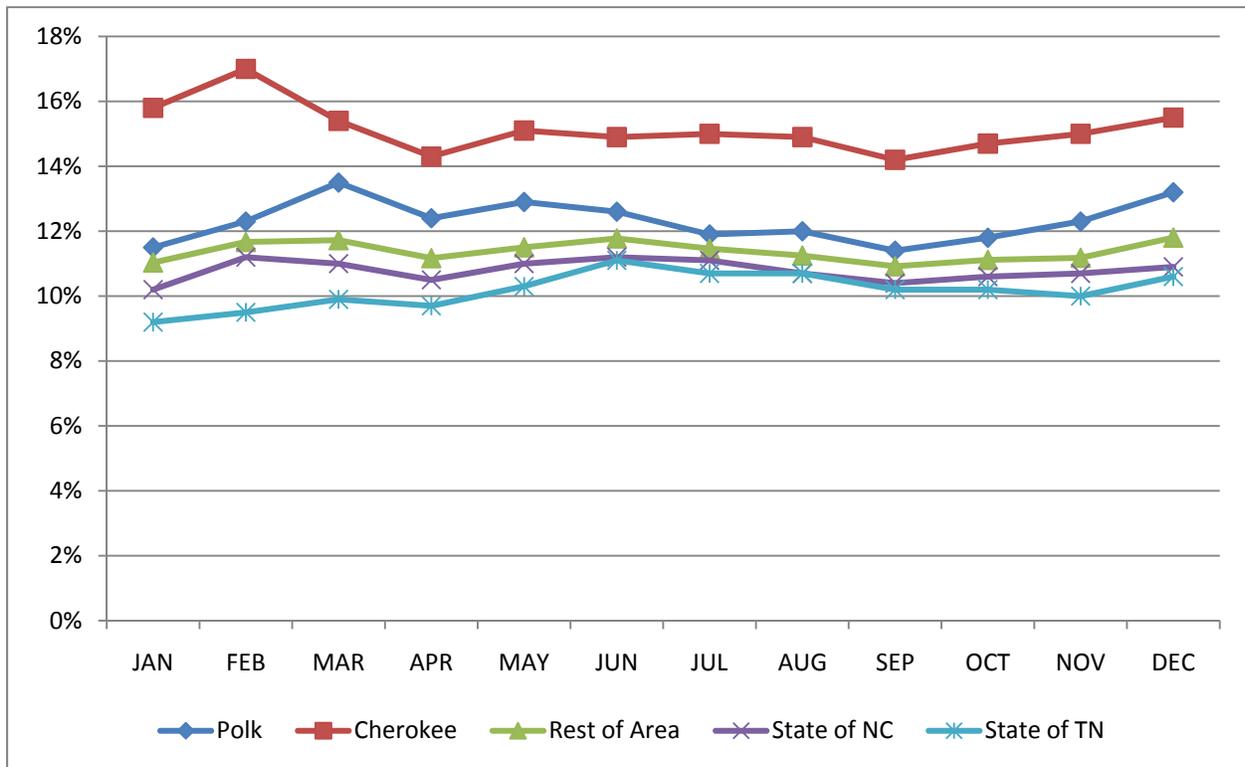


Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted.

Figure 9 shows the unemployment rates for Polk and Cherokee Counties, North Carolina, Tennessee, and the rest of the area located in relatively close proximity to the rockslide. Not surprisingly, the state rates are relatively lower than the county rates. Polk and Cherokee rates are also higher than the average rate experienced by the other study area counties.

Figure 9: 2009 Unemployment Rates

Polk and Cherokee Counties vs. States of NC and TN, Rest of Study Area



Source: Bureau of Labor Statistics, December 2009 data are preliminary, data are not seasonally adjusted.

Although the county-wide data do not definitively indicate that unemployment has increased as a result of the rockslides, numerous businesses in the area have been negatively impacted. The following section presents the interview findings for the US-64 rockslide impacted area.

Appendix B – Businesses Contacted and Interviewed for Study

Business	Contacted	Information Obtained	Employees Laid Off	Business Sales Decreased
Abitibi Bowater Paper Co.	√			
Arch Chemicals	√			
Baptist Hospital Cocke County	√			
Bella's Country Kitchen	√			
Biltmore Estate	√			
Brandywine Creek	√	√	√	√
Cataloochee Ski Area	√			
Christmas Is Here	√	√	√	√
Comfort Inn/Parkway Inn	√	√	√	
ConAgra Foods	√			
Copper Basin Medical Center	√	√	√	√
Covenant Transportation Group	√			
Creekwood Farm RV Park	√	√		√
Downtown Hartford Citgo	√	√	√	√
Eastern Band of Cherokee Indians	√			
Evergreen Packaging	√	√		
Fun Things to Do in the Mountains	√			
Harrah's Cherokee Casino	√			
Haywood Insurance Svces	√			
Haywood Regional Medical Center	√	√		
Hearth and Home Inn	√	√		√
Herb's Barbecue	√	√		
Herren House	√	√	√	√
Jackie Evans Trucking	√	√		
K and S Tanklines	√	√		√
King's Leathercraft	√	√		
Lisega, Inc.	√	√		
Lomo Grill	√			
Manufacturers Chemical Corporation	√	√		
Mercier Orchards	√	√		
MGM Brakes/Indian Head Industries	√	√		
Motel 6	√	√	√	√
Oaks Unlimited	√	√		
Ocoee Adventure Center	√	√	√	√
Ocoee Inn Motel	√			
Ocoee River Transport	√			
Olin Chemicals	√	√		
Payne Tire & Grocery	√	√		
Peyton Southeastern	√			
Piggly Wiggly	√	√	√	√

Rocky Top Tours	√	√	√	√
Sagebrush Steakhouse	√			
Sioux Tools/Snap-on Power Tools	√			
Sonoco Products	√			
Tarver Distributing	√	√		
The Mustard Seed	√			
USXpress	√	√		
Waynesville Inn	√	√	√	√
White House B&B	√			
Willis Oil Company	√	√		√
Windover Inn	√	√		√
Wolf Creek Corner	√	√		
Xoxloma LLC/Cougar	√	√		√
TOTAL	54	32		